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CAMBOARD Electronics

Extron® Electronics

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User's Guide

VersaTools® MTP Series

Video and Audio Mini Twisted Pair Transmitters and Receivers

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Precautions

Safety Instructions • English

This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

Caution

Read Instructions • Read and understand all safety and operating instructions before using the equipment.

Retain Instructions • The safety instructions should be kept for future reference.

Follow Warnings • Follow all warnings and instructions marked on the equipment or in the user information.

Avoid Attachments • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

Consignes de Sécurité • Français

Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).

Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

Attention

Lire les instructions• Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conserver les instructions• Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

Eviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

Sicherheitsanleitungen • Deutsch

Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits-und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Instrucciones de seguridad • Español

Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.

Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

Precaucion

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean especificamente recomendados por el fabricante, ya que podrian implicar riesgos.

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Avertissement

Alimentations• Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

Déconnexion de l'alimentation• Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

Protection du cordon d'alimentation • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il a danger d'explosion s'll y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype equivalent recommande par le constructeur. Mettre au reut les batteries usagees conformement aux instructions du fabricant.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdanschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stomversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegengestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

Schlitze und Öffnungen • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

Litium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Advertencia

Alimentación eléctrica • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearia ni eliminaria.

Desconexión de alimentación eléctrica • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

Protección del cables de alimentación • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

Reparaciones/mantenimiento • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalientamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

Batería de litio • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

FCC Class A Notice

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Note: This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance.

Extron's Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America, and Central America:

Extron Electronics
1001 East Ball Road
Anaheim, CA 92805, USA

Europe, Africa, and the Middle East:

Extron Electronics, Europe
Beeldschermweg 6C
3821 AH Amersfoort
The Netherlands

Asia:

Extron Electronics, Asia
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363

Japan:

Extron Electronics, Japan
Kyodo Building
16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions or non-Extron authorized modification to the product.

If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), 65.6383.4400 (Asia), or 81.3.3511.7655 (Japan) to receive an RA# (Return Authorization number). This will begin the repair process as quickly as possible.

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

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Chapter One

Introduction

About the MTP Transmitters and Receivers

TP Cable Advantages

Transmission Distance

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About the MTP Transmitters and Receivers

The Extron MTP transmitters and receivers provide a system for long-distance distribution of NTSC, PAL, or SECAM video and audio over Extron's Enhanced Skew-Free™ A/V UTP cable or over Category (CAT) 5 shielded twisted pair (STP), unshielded twisted pair (UTP), or foil shielded twisted pair (FTP) cable.

The MTPs are a part of the Extron VersaTools® line of basic distribution amplifiers, switchers, transmitters, receivers, and associated video accessories.

The MTP transmitters input and the receivers output S-video [luminance (Y) and chrominance (C)] or composite video. Audio versions are available that input and output either balanced or unbalanced audio on captive screw connectors or unbalanced audio on RCA connectors.

Each transmitter requires a compatible receiver. The table on the next page shows the video and audio capabilities of each model, the transmitter/receiver compatibility, Architectural Adapter Plate (AAP) mountability, and 45 mm plate mountability.

The MTPs ship with external desktop 12 V power supplies that accept 100 to 240 VAC, 50 Hz or 60 Hz input. A single power supply connected to either the transmitter or receiver can power both units if there is less than 500 feet (150 meters) of STP/UTP/FTP cable between the two.

TP Cable Advantages

Twisted pair (TP) cable is much smaller, lighter, more flexible, and less expensive than coaxial cable. These TP products make cable runs simpler and less cumbersome. Termination of the cable with RJ-45 connectors is simple, quick, and economical.

Transmission Distance

Extron suggests a minimum transmission distance of at least 50 feet. The maximum transmission distance, using Enhanced Skew-Free A/V UTP cable or UTP CAT 5 cable, terminated with CAT 5 rated connectors, is 1000 feet.

NOTE *It is possible to exceed the recommended distance, however, image quality may be reduced.*

	MTP Series Features					
Transmitters	S-video	Composite video	Audio (captive screw)	Audio (RCA)	AAP mounted	45mm plate-mounted
MTP T SV	●					
MTP T SV A	●		●			
MTP T SV A RCA	●			●		
MTP T SVA AAP	●			●	●	
MTP T SVA 45	●			●		●
MTP T CV		●				
MTP T AV		●	●			
MTP T AV RCA		●		●		
MTP T AV AAP		●		●	●	
MTP T AV 45		●		●		●
Receivers						
MTP R SV	●					
MTP R SV A	●		●			
MTP R SV A RCA	●			●		
MTP R CV		●				
MTP R AV		●	●			
MTP R AV RCA		●		●		

NOTE *The transmitters and receivers are designed for and perform best with Extron Enhanced Skew-Free A/V cable. CAT 5 cables are acceptable, but are less preferable. We also recommend the use of preterminated and tested cables when possible. Cables terminated on site should be tested before use to ensure that they comply with Category 5 specifications.*

NOTE

- *The video portion of **any S-video** transmitter's output is compatible with any S-video receiver in the MTP family.*
- *The video portion of **any composite video** transmitter's output is compatible with any composite video receiver in the MTP family.*
- *The audio portion of **any audio** transmitter's output, whether it is equipped with either captive screw or RCA input connectors, is compatible with any audio receiver in the MTP family.*

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Chapter Two

Installation

Mounting Options

Panel Features and Connections

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CAUTION *Installation and service must be performed by authorized personnel only.*

Mounting Options

Tabletop use (all except AAP and 45 models)

The non-AAP and non-45 model MTPs come with self-adhesive rubber feet attached to the four corners of the bottom. Set the MTP on a horizontal surface.

Rack mounting (all except AAP and 45 models)

For optional rack mounting, mount the MTP on any of the following rack shelves:

- VersaTools® 19" 1U rack shelf kit (part #**60-190-20**) (figure 2-1)
- VersaTools 19" basic 1U rack shelf (part #**60-604-20**)
- 6" deep 1U rack shelf kit (part #**60-190-10**)
- 6" deep basic 1U rack shelf (part #**60-604-10**)
- Standard universal 1U rack shelf kit (part #**60-190-01**) (figure 2-2)
- Basic universal 1U rack shelf (part #**60-604-01**)

On the standard rack shelf, the MTP mounts in one of eight locations to the rear of the rack or in one of eight locations to the front of the rack.

1. Remove the feet from the bottom of the MTP, if installed.
2. Mount the MTP using two 4-40 x 3/16" screws in opposite (diagonal) corners to secure the MTP to the shelf.
3. Install blank panel(s) or other unit(s) to the rack shelf.

NOTE *Only products in the VersaTools line can be mounted to a VersaTools shelf. Most 1U rack-mountable Extron products can be mounted on the standard shelf.*

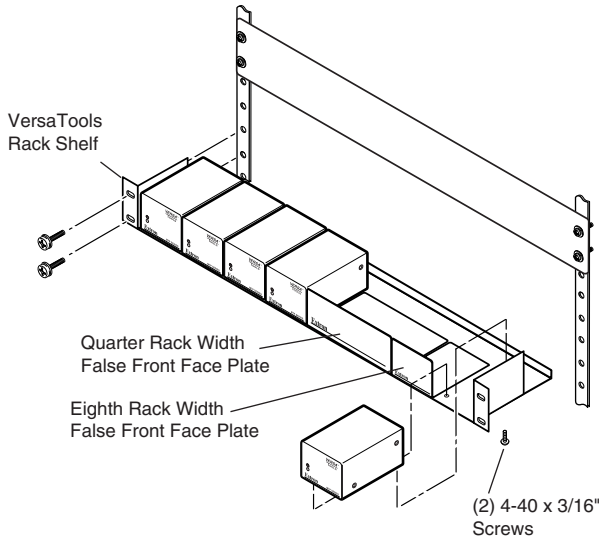

Figure 2-1 — Mounting the MTPs on a VersaTools rack shelf

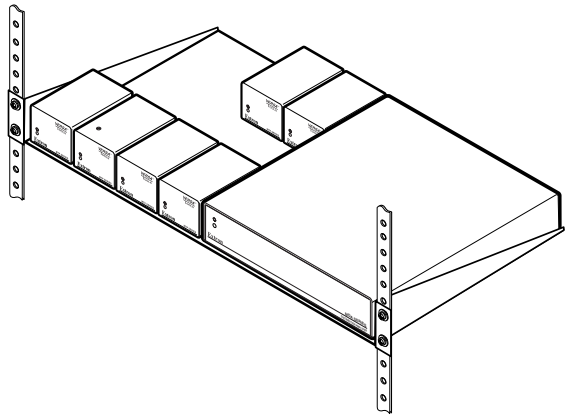

Figure 2-2 — Mounting the MTPs on a standard rack shelf

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Furniture or projector mounting (all except AAP and 45 models)

Use the optional mounting kit (furniture, part #**70-212-01,** or projector, part #**70-217-01**) to mount the MTP as follows:

1. Remove the feet from the bottom of the MTP, if installed.
2. Attach the mounting brackets to the MTP with the machine screws provided (figure 2-3).

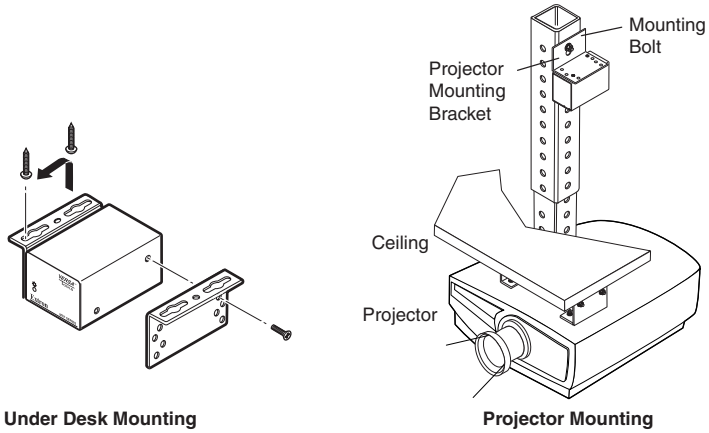

Figure 2-3 — Desk and projector mounting the MTPs

3. **For furniture mounting** —
   a. Hold the MTP with the attached brackets against the underside of the mounting surface. Mark the bracket screw hole locations on the mounting surface.
   b. Drill 3/32" (2 mm) diameter pilot holes, 1/4" (6.3 mm) deep in the mounting surface at the marked screw locations.
   c. Insert #8 wood screws into the four pilot holes. Tighten each screw into the mounting surface until just less than 1/4" of the screw head protrudes.
   d. Align the mounting screws with the slots in the brackets and place the MTP against the surface, with the screws through the bracket slots.
   e. Slide the MTP slightly forward or back, then tighten all four screws to secure the MTP in place.
4. **For projector mounting**, secure the MTP to a projector mount by inserting the mounting bolt through the bracket's slotted hole.

Frame mounting (AAP models)

The AAP-mountable transmitters (MTP T SVA AAP and MTP T AV AAP) can be mounted to any Extron AAP mounting frame that accepts a double space (double height) AAP module. See *AAP accessories* in the appendix for a partial list of AAP devices.

NOTE *The rear panel MTP connections will be inaccessible after installation. Make all connections (see* Transmitter/receiver throughput connections, *page 2-10*) *and test the twisted pair system (apply a video source and observe that transmitted video is displayed satisfactorily) before installing the panel-mounted transmitter.*

Install an MTP transmitter in an AAP frame as follows (figure 2-4):

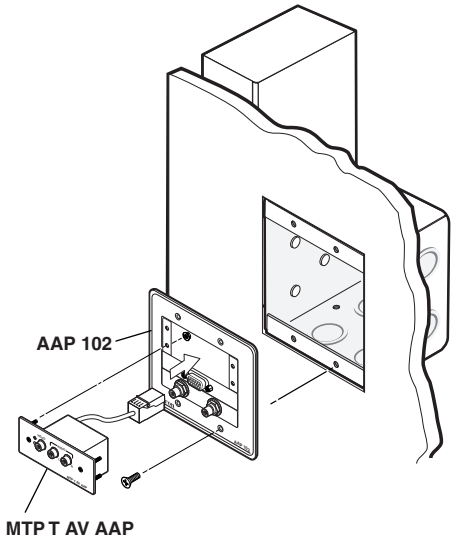

Figure 2-4 — AAP mounting an MTP transmitter

1. If necessary, remove the AAP frame from the device in which it is installed.
2. Cable the rear of the transmitter before fastening the AAP module to the AAP frame.
3. Insert each of the AAP module's screws through the holes in the AAP frame. Secure the transmitter to the frame with the provided captive washers and #4-40 nuts.
4. Install the AAP frame as appropriate to the type of frame. Figure 2-4 shows the transmitter module being installed in an AAP 102 wall mounting frame and the frame being installed in a wall box.

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Panel mounting (45 models)

The MTP T SVA 45 and MTP T AV 45 can be mounted to wall-mountable or floor box-mountable 45 mm plates, which are commonly used in wall mount and floor box applications throughout Europe. Figure 2-5 shows one example of such an installation.

NOTE *The rear panel MTP connections will be inaccessible after installation. Make all connections (see* Transmitter/receiver throughput connections*, page 2-10) and test the twisted pair system (apply a video source and observe that transmitted video is displayed satisfactorily) before installing the panel-mounted transmitter.*

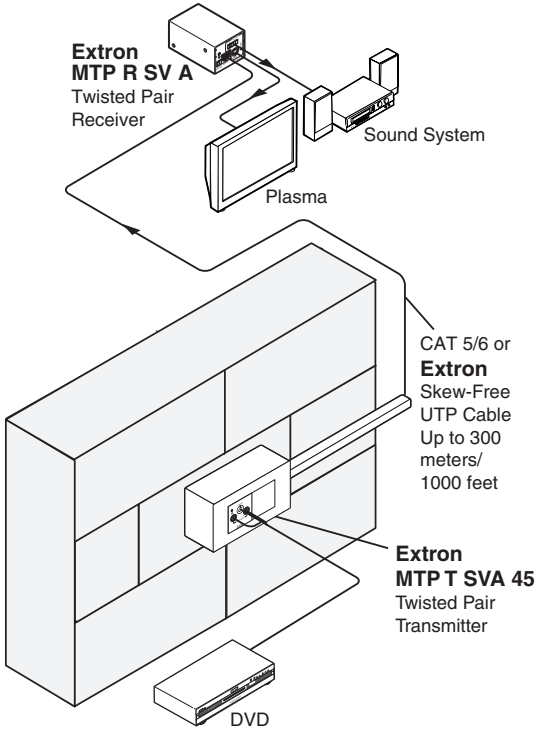

Figure 2-5 — Mounted MTP T SV A 45 transmitter

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Panel Features and Connections

Transmitter input connections

Figure 2-6 shows all of the combinations of video and audio input connectors that you may encounter with your MTP transmitter.

NOTE *Some transmitters do not have audio connections.*

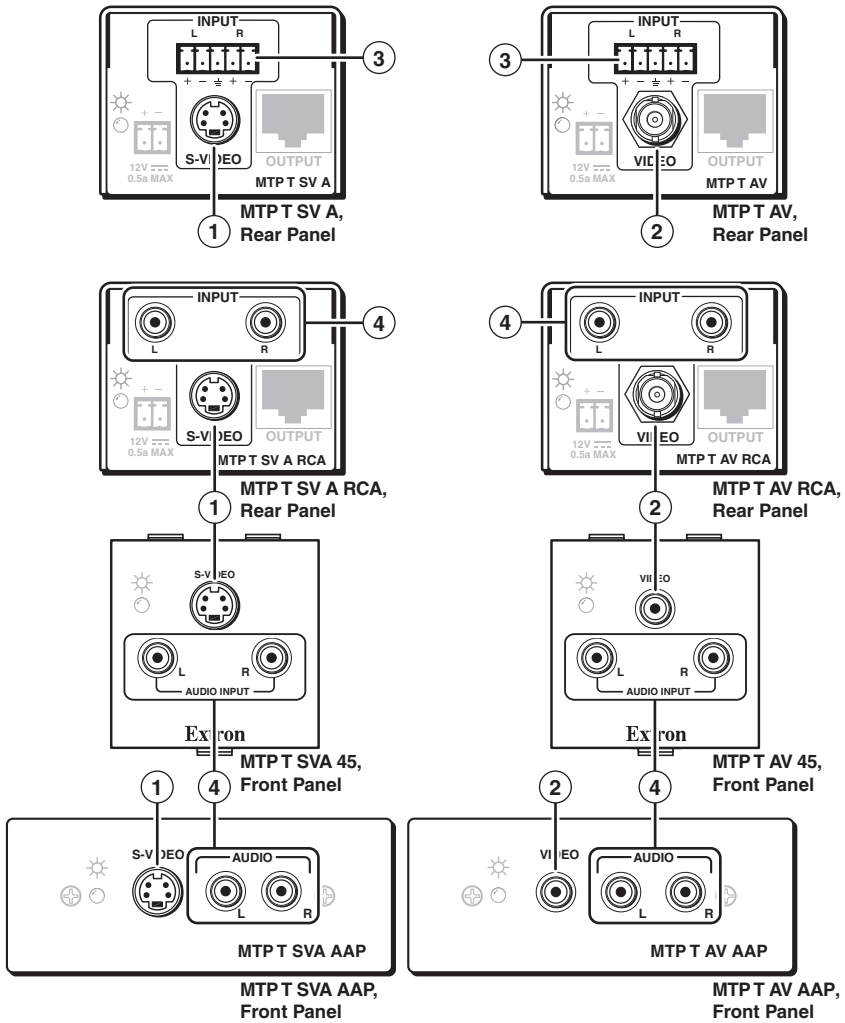
INPUT
L R
S-VIDEO
VIDEO
OUTPUT
12V 0.5a MAX
MTP T SV A
MTP T AV
MTP T SV A RCA
MTP T AV RCA
AUDIO INPUT
AUDIO
MTP T SVA 45
MTP T AV 45
MTP T SVA AAP
MTP T AV AAP
1 MTP T SV A, Rear Panel
2 MTP T AV, Rear Panel
1 MTP T SV A RCA, Rear Panel
2 MTP T AV RCA, Rear Panel
1 4 MTP T SVA 45, Front Panel
2 4 MTP T AV 45, Front Panel
MTP T SVA AAP, Front Panel
MTP T AV AAP, Front Panel

Figure 2-6 — Video and audio input connections

(1) **S-video connector (SV models)** — Connect an S-video input to this 4-pin mini DIN connector.

(2) **Composite video connector (CV and AV models)** — Connect a composite video input to this connector (female RCA on the MTP T AV AAP and MTP T AV 45, female BNC on all other models).

(3) **Audio input captive screw connector (MTP T SV A, MTP T AV)** — Connect a balanced or unbalanced audio input to this 3.5 mm, 5-pole captive screw connector. Connectors are included with each MTP, but you must supply the audio cable. See figure 2-7 to wire a connector for the appropriate input type and impedance level. High impedance is generally over 800 ohms.

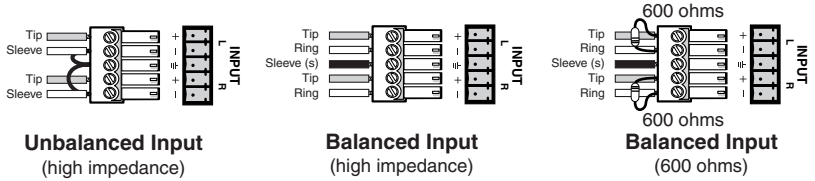

Figure 2-7 — Captive screw input connector wiring

NOTE *When making connections for the MTP from existing audio cables, see figure 2-8 to identify the tip, ring, and sleeve wires in various connectors. A mono audio connector consists of the tip and sleeve. A stereo audio connector consists of the tip, ring and sleeve. The ring, tip, and sleeve wires are also shown on the captive screw audio connector diagrams, figure 2-7 and figure 2-16.*

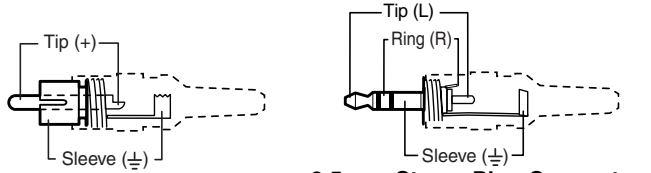

Figure 2-8 — Typical audio connectors

(4) **Audio input RCA connectors (RCA, AAP, and 45 models)** — Connect an unbalanced stereo audio source to these L(eft) and R(ight) RCA connectors (figure 2-9).

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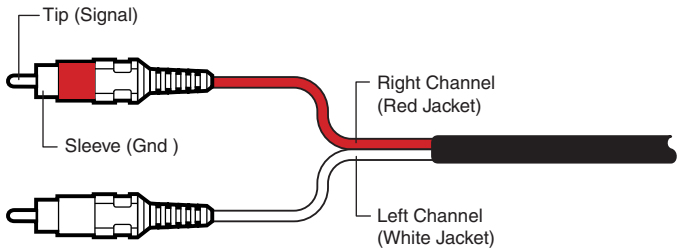

Figure 2-9 — RCA audio connectors

Transmitter/receiver throughput connections

See figure 2-10 to identify the connections between the transmitter and receiver.

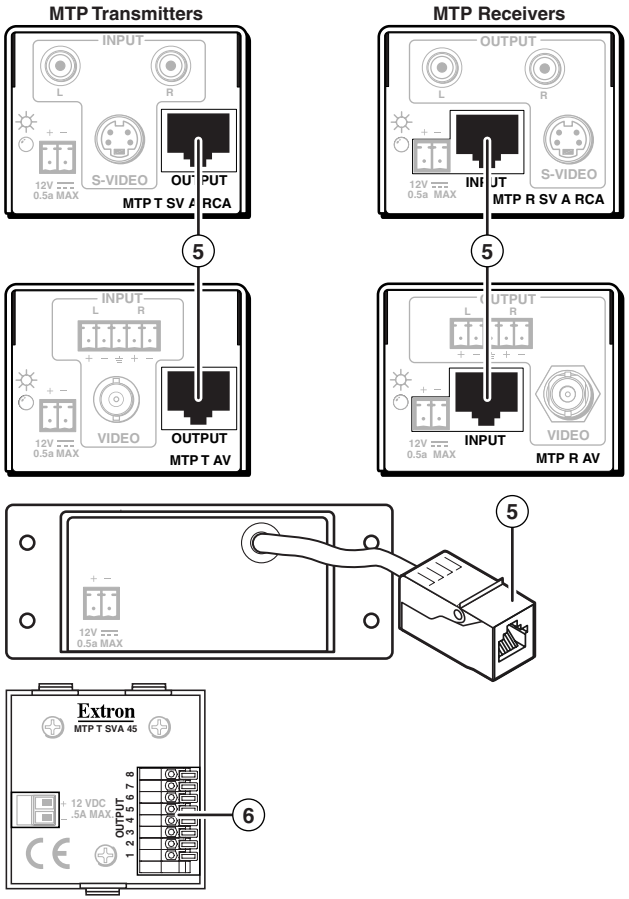

Figure 2-10 — Throughput connections

CAUTION *Do not connect these devices to a computer data or telecommunications network.*

NOTE *RJ-45 termination must comply with the TIA/EIA T 568A or TIA/EIA T 568B wiring standards for all connections.*

(5) **Transmitter output and receiver input connector —** Connect one end of a TP cable to this RJ-45 female connector on the transmitter. On the MTP T SV A AAP and MTP T AV AAP, the connector is at the end of a short pigtail.

Connect the free end of the same TP cable from the transmitter to this RJ-45 female connector on the receiver.

(6) **Transmitter output connector (MTP T AV 45 and SVA 45) —** Connect one end of a TP cable to this spring force captive wire connector on the transmitter.

Strip approximately 0.43" (1.1 cm) of insulation from each individual wire on one end of a TP cable. Using the included Tweeker tool and observing the correct wiring colors in the table in figure 2-12, insert the stripped TP wire ends into the connector (figure 2-11).

Connect the free end of the same TP cable from the transmitter to the RJ-45 female connector, (5), on the receiver.

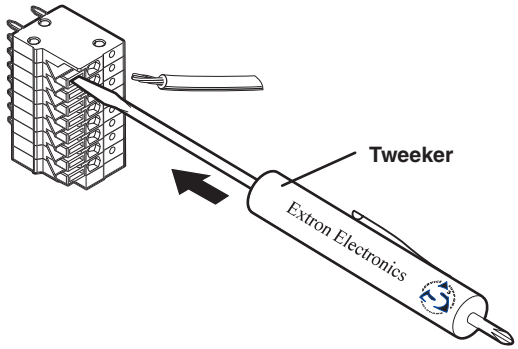

Figure 2-11 — Inserting wires in a spring force wire connector

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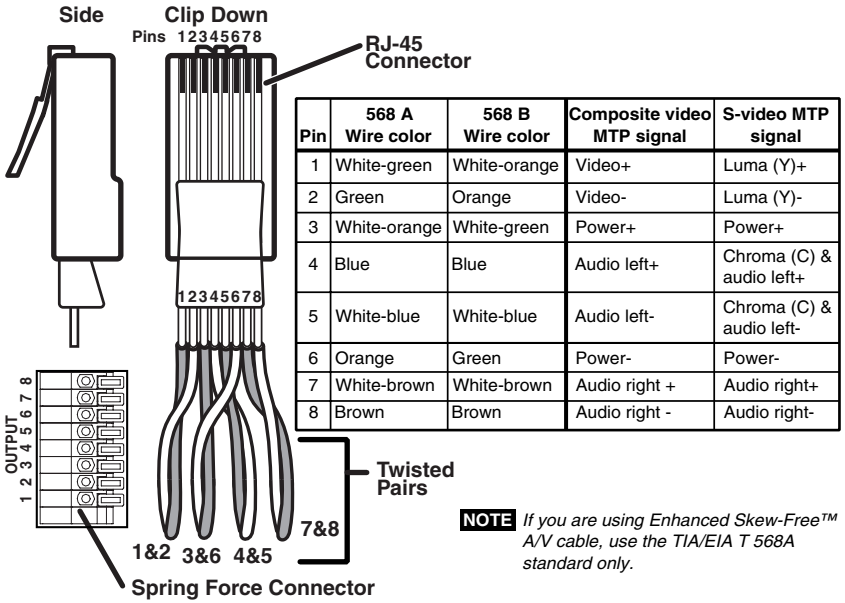
TP cable termination

Figure 2-12 details the recommended termination of TP cables with RJ-45 or spring force connectors in accordance with the TIA/EIA T 568A or TIA/EIA T 568B wiring standards. You can use either standard, but ensure that you use the same standard on both cable ends.



Pin	568 A Wire color	568 B Wire color	Composite video MTP signal	S-video MTP signal
1	White-green	White-orange	Video+	Luma (Y)+
2	Green	Orange	Video-	Luma (Y)-
3	White-orange	White-green	Power+	Power+
4	Blue	Blue	Audio left+	Chroma (C) & audio left+
5	White-blue	White-blue	Audio left-	Chroma (C) & audio left-
6	Orange	Green	Power-	Power-
7	White-brown	White-brown	Audio right +	Audio right+
8	Brown	Brown	Audio right -	Audio right-

NOTE *If you are using Enhanced Skew-Free™ A/V cable, use the TIA/EIA T 568A standard only.*

Figure 2-12 — TP cable termination

When you are using Enhanced Skew-Free™ A/V cable, use **only** the TIA/EIA T 568A standard.

The details in the table shown on figure 2-12 are correct for the all models, whether the cable is installed in an RJ-45 connector or a spring force wire connector (figure 2-11).

NOTE *Enhanced Skew-free A/V cable is **not recommended** for Ethernet/LAN applications.*

This cable is specially designed for compatibility with Extron's Twisted Pair products, wired using the TIA/EIA 568 A standard.

The green, brown, and blue pairs of this cable have virtually identical lengths and should be used to transmit the video signals.

*The orange pair of this cable has a different length and **should not** be used to transmit the video signals.*

Power connection (all models) and panel screws (AAP models)

See figure 2-13 to identify the power connections and indicators and to identify the panel screws.

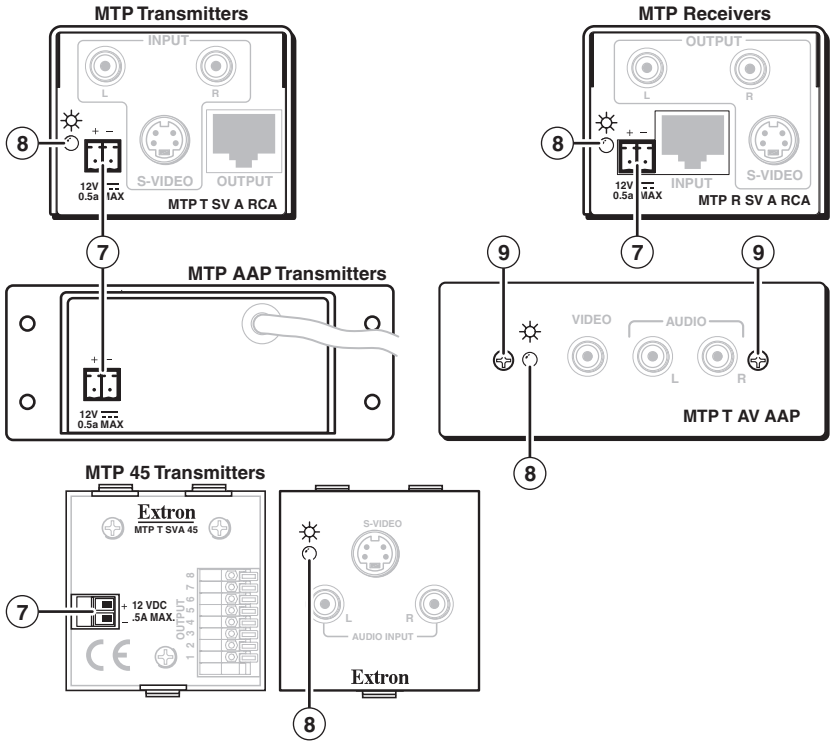


Figure 2-13 — Power connections and indicators

(7) **Power connector—** Plug the external 12 VDC power supply into this 2-pole captive screw connector or direct insertion connector on either the transmitter or the receiver. The device connected to the power supply, in turn, provides power to its counterpart. Figure 2-14 shows how to wire the connectors.

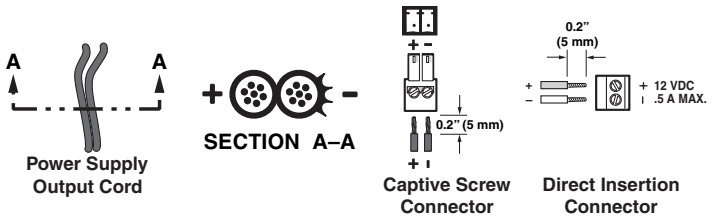


Figure 2-14 — Power connector wiring

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CAUTION *Power supply voltage polarity is critical. Incorrect voltage polarity can damage the power supply and the MTP. Identify the power cord negative lead by the ridges on the side of the cord (figure 2-14).*

CAUTION *The length of the exposed (stripped) copper wires is important. **The ideal length is 0.2" (5 mm)**. Longer bare wires can short together. Shorter wires are not as secure in the captive screw connectors and could be pulled out.*

NOTE *Do not tin the stripped power supply leads before installing the captive screw or direct insertion connector. Tinned wires are not as secure in the captive screw and direct insertion connectors and could be pulled out.*

NOTE *If the transmitter and receiver are separated by greater than 500 feet (150 meters) of STP/UTP/FTP cable, connect a power supply to both units.*

To verify the polarity before connection, plug in the power supply with no load and check the output with a voltmeter.

WARNING *The two power cord wires must be kept separate while the power supply is plugged in. Remove power before wiring.*

As an alternative, an Extron P/S 100 Universal 12 VDC Power Supply, part **#60-357-01**, can power up to ten MTPs or other Extron 12 VDC devices using only one AC power connector.

(8) **Power LED —** Indicates power is applied to the MTP.

(9) **Panel screws (AAP units only) —** These screws secure the MTP enclosure to the faceplate. **Do not remove these screws** or else the enclosure will fall inside the device to which it is mounted.

Receiver output connections

See figure 2-15 on page 2-15 to identify the receivers' rear panel output connections. The figures show all of the combinations of connectors that you may encounter with your MTP receiver.

NOTE *Some receivers do not have audio connections.*

(10) **S-video connector (SV models)** — Connect an S-video device to this 4-pin mini DIN connector.

(11) **Composite video connector (CV and AV models)** — Connect a composite video device to this BNC connector.

(12) **Captive screw audio connector (MTP R SV A, MTP R AV)** — Connect a balanced or unbalanced audio device, such as an audio amplifier to this 3.5 mm, 5-pole captive screw connector. See figure 2-16 to properly wire the output connector.

CAUTION *Connect the sleeve to ground (Gnd). Connecting the sleeve to a negative (-) terminal will damage the audio output circuits.*

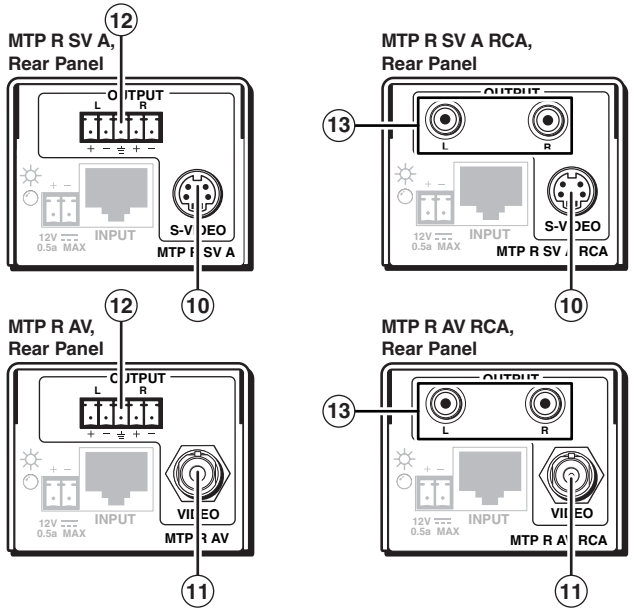

Figure 2-15 — Output connector wiring

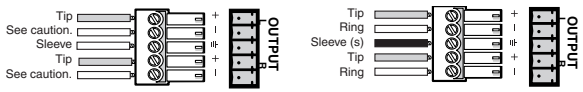

Figure 2-16 — Captive screw connector wiring for audio output

(13) **RCA audio connectors (RCA models)** — Connect a stereo audio device to these L(eft) and R(ight) RCA connectors.

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Chapter Three

Operation

Front Panel Features

Troubleshooting — Skew Delay Compensation

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Front Panel Features

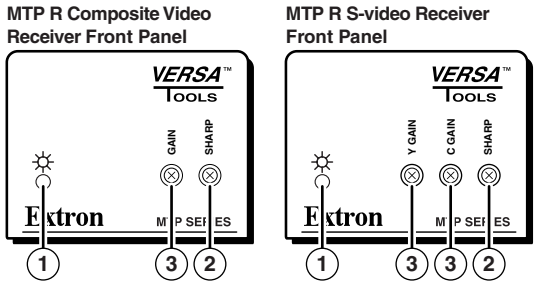

Figure 3-1 — MTP receiver front panels

(1) **Power LED —** When lit, this LED indicates power is applied to the MTP.

(2) **Sharpness** — Adjusts the output image sharpness for long cable runs.

(3) **Gain control** — Adjusts the brightness of the output image to compensate for long cable runs.

S-video receivers — There are separate controls for luminance (Y) and chrominance (C) on S-video MTP receivers. If the chrominance setting on the MTP receiver's S-video output is too low, the image may appear in monochrome. Adjust the S-video gain until color appears.

Composite video receivers — There is only one gain control on composite video MTP receivers.

NOTE *All control knobs are removable to limit access if desired.*

Troubleshooting — Skew Delay Compensation

CAT 5 TP cable can cause registration errors (in which luminance leads or lags chrominance) between the Y and C video signals on S-video transmitter/receiver pairs. Try using the following methods to minimize or eliminate pair skew:

- Switch to Extron's Enhanced Skew-Free A/V UTP cable.
- Add an S-video-to-BNC adapter and a skew compensation cable equal to the length of pair skew to the receiver's output.
- Install an S-video-to-BNC adapter and and SEQ 100 BNC Skew Equalizer on the receiver's video output and adjust the skew for the leading video image.

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Appendix A

Reference Information

Specifications

Part Numbers

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Specifications

Video

Gain	Unity
Differential phase error	<1.0º at 3.58 MHz and 4.43 MHz
Differential gain error	<1.0% at 3.58 MHz and 4.43 MHz

Video input

Number/signal type

MTP T CV/AV Series, MTP T AV 45	1 composite video
MTP T SV Series, MTP T SVA 45	1 S-video
MTP R CV/AV/SV Series	1 set of proprietary analog signals

Connectors

MTP T CV/AV Series	1 female BNC
MTP T AV AAP, MTP T AV 45	1 female RCA
MTP T SV Series, MTP T SVA 45	1 female 4-pin mini DIN
MTP R CV/AV/SV Series	1 female RJ-45
Nominal level	1 Vp-p for Y of S-video and for composite video 0.3 Vp-p for C of S-video
Minimum/maximum levels	0.3 V to 1.5 Vp-p with no offset
Impedance	75 ohms
Return loss	<-30 dB, DC @ 10 MHz
DC offset (max. allowed)	100 mV

Video output

Number/signal type

MTP T CV/AV/SV Series, MTP T AAP Series, and MTP T 45 Series	1 set of proprietary analog signals
MTP R CV/AV Series	1 composite video
MTP R SV Series	1 S-video

Connectors

MTP T CV/AV/SV Series	1 female RJ-45
MTP T AAP Series	1 female RJ-45 on a 3" (7.6 cm) pigtail
MTP T 45 Series	(1) 8-pin spring force wire connector
MTP R CV/AV Series	1 female BNC
MTP R SV Series	(1) 4-pin mini DIN
Nominal level	1 V p-p for Y of S-video and for composite video 0.3 V p-p for C of S-video
Minimum/maximum levels	0.3 V to 1.5 Vp-p
Impedance	75 ohms
Return loss	<-35 dB @ 5 MHz
DC offset	±5 mV with input at 0 offset

Sync

Standards	NTSC 3.58, NTSC 4.43, PAL, SECAM

Audio — audio models (A, AV, SVA models) only

Gain

RCA models	Unbalanced output: 0 dB (unity)
All other models	Unbalanced output: 0 dB (unity); balanced output: +6 dB
Frequency response	20 Hz to 20 kHz, ±0.25 dB
THD + Noise	0.03% @ 1 kHz, 0.3% @ 20 kHz at nominal level

S/N

RCA models	>90 dB, at rated maximum output
All other models w/audio	>90 dB, balanced at maximum output
Crosstalk	<-80 dB @ 1 kHz, fully loaded
Stereo channel separation	>75 dB @ 1 kHz
CMRR	>50 dB @ 20 Hz to 20 kHz

Audio input — audio models (A, AV, SVA models) only

Number/signal type

MTP T AV, MTP T SV A	1 stereo, balanced/unbalanced
MTP T AV/SV A RCA, MTP T AAP, MTP T 45 Series	1 stereo, unbalanced
MTP R Series	1 set of proprietary analog signals

Connectors

MTP T AV, MTP T SV A	(1) 3.5 mm captive screw connector, 5 pole
MTP T AV/SV A RCA, MTP T AAP, MTP T 45 Series	1 pair of RCA female
MTP R Series	1 female RJ-45 (shielded)
Impedance	>6.3k ohms unbalanced, >10k ohms balanced, DC coupled

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Nominal level ..... -10 dBV (0.32 Vrms)
Maximum level ..... >+2.4 dBu (balanced or unbalanced) at 1%THD+N

NOTE *0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu.*

Audio output — audio models (A, AV, SVA models) only

Number/signal type
- MTP T Series (all models) 1 set of proprietary analog signals
- MTP R AV, MTP R SV A 1 stereo, balanced/unbalanced
- MTP R AV/SV A RCA .... 1 stereo, unbalanced

Connectors
- MTP T Series ..... 1 female RJ-45 (shielded)
- MTP T AAP Series ..... 1 female RJ-45 on a 3" (7.6 cm) pigtail
- MTP T 45 Series ..... (1) 8-pin spring force wire connector
- MTP R AV, MTP R SV A (1) 3.5 mm captive screw connector, 5 pole
- MTP R AV/SV A RCA .... 1 pair of RCA female

Impedance
- MTP R AV, MTP R SV A 50 ohms unbalanced, 100 ohms balanced
- MTP R AV/SV A RCA .... 50 ohms unbalanced

Gain error ..... ±0.1 dB channel to channel
Maximum level (Hi-Z) ..... >+3.3 dBu, balanced or unbalanced at 1%THD+N
Maximum level (600 ohm) ..... >+2.0 dBm, balanced or unbalanced at 1%THD+N

General

Power ..... Supplied by an external power supply
External power supply ..... 100 VAC to 240 VAC, 50/60 Hz, external, autoswitchable; to 12 VDC, 1.0 A, regulated
Power input requirements ..... 12 VDC, 0.2 A

NOTE *If the distance between the transmitter and receiver is less than 500' (150 m), you can connect a power supply to only one device in a transmitter/receiver pair. If the distance between transmitter and receiver is greater than 500' (150 m), connect a power supply to each device.*

Temperature/humidity ..... Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing
Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing

Rack mount
- MTP T AAP Series ..... Yes, with optional rack panel, or furniture-/wall-mountable with optional AAP mounting plates
- MTP T 45 Series ..... No, but mountable in a 45 mm x 45 mm opening in common European wall boxes, floor boxes, or cable channel systems
- All other models ..... Yes, with optional 1U rack shelf, part #60-190-01 or 60-604-01; or VersaTools® rack shelf, part #60-190-20 or 60-604-20. Also furniture-mountable with optional brackets.

Enclosure type ..... Metal
Enclosure dimensions (Depths exclude connectors and cables.)
- MTP T AAP Series
  - Faceplate ..... 1.4" H x 3.5" W x 0.1" D (3.6 cm H x 8.9 cm W x 0.3 cm D) (double space AAP plate)
  - Transmitter ..... 1.2" H x 2.75" W x 1.75" D .0 cm H x 7.0 cm W x 4.4 cm D)
- MTP T 45 Series
  - Faceplate ..... 1.8" H x 1.7" W x 0.8" D 45 mm H x 45 mm W x 20 mm D
  - Device ..... 1.1" H x 1.6" W x 1.2" D 29 cm H x 41 mm W x 30 mm D
- All other models ..... 1.7" H x 2.2" W x 3.0" D (1U high, one-eighth rack wide) 4.2 cm H x 5.6 cm W x 7.6 cm D

Product weight ..... 1.0 lbs (0.5 kg)
Shipping weight ..... 3 lbs (2 kg)
Vibration ..... ISTA 1A in carton (International Safe Transit Association)
Listings (all models except MTP T AV 45 and MTP T SVA 45) UL, CUL
Compliances ..... CE, FCC Class A, VCCI, AS/NZS, ICES
MTBF ..... 30,000 hours
Warranty ..... 3 years parts and labor

NOTE *All nominal levels are at ±10%.*

NOTE *Specifications are subject to change without notice.*

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Part Numbers

MTP transmitters

Description	Part number to reorder
MTP T SV	60-540-02
MTP T SV A	60-540-22
MTP T SV A RCA	60-541-32
MTP T SV A AAP (gray, black, white)	70-362-01, 02, 03
MTP T SV A 45	60-657-01
MTP T CV	60-540-01
MTP T AV	60-540-21
MTP T AV RCA	60-540-31
MTP T AV AAP (gray, black, white)	70-361-01, 02, 03
MTP T AV 45	60-656-01

MTP receivers

Description	Part number
MTP R SV	60-541-02
MTP R SV A	60-541-22
MTP R SV A RCA	60-541-32
MTP R CV	60-541-01
MTP R AV	60-541-21
MTP R AV RCA	60-541-31

AAP accessories

Description	Part number
AAP 102 panel (gray, black, white)	60-300-01, 02, 03
AAP 104 panel (gray, black, white)	60-301-01, 02, 03
AAP 106 panel (gray, black, white)	60-531-01, 02, 03
AAP 201 panel - half rack width, 1U (gray)	60-302-01
AAP 202 panel - half rack width, 2U (gray)	60-303-01
AAP 301 panel - full rack width, 1U (gray)	60-459-01
AAP 302 panel - full rack width, 1U (gray)	60-459-02

Accessories

Accessories	Part number
P/S 100 multiple output 12 V power supply	60-357-01
19" 1U universal rack shelf kit	60-190-01
19" 1U basic rack shelf	60-604-01
6" deep 1U universal rack shelf kit	60-190-10
6" deep 1U basic rack shelf	60-604-10
VersaTools universal rack shelf kit	60-190-20
VersaTools basic rack shelf	60-604-20
VersaTools furniture mounting kit	70-212-01
VersaTools projector mounting kit	70-217-01

Cables/connectors

NOTE *Enhanced Skew-Free™ A/V UTP cables are not recommended for Ethernet/LAN applications.*

Enhanced Skew-Free™ A/V cable	Part number
Enhanced Skew-Free A/V UTP (various lengths)	26-569-*xx*
Enhanced Skew-Free A/V UTP, bulk	22-141-03
Plenum Enhanced Skew-Free A/V UTP, bulk	22-142-03

RJ-45 connector	Part number
CAT 6 jack (black)	10-463-10
CAT 6 jack (red)	10-463-11
CAT 6 jack (blue)	10-463-12
CAT 6 jack (orange)	10-463-13
CAT 6 jack (gray)	10-463-14
CAT 6 jack (white)	10-463-15
CAT 6 jack (ivory)	10-463-16

Skew compensation solutions

S-video to BNC adapter	
S-video male to 2 female BNCs (0.8"/0.3 m)	26-353-01
S-video male to 2 male BNCs (1'/0.3 m)	26-353-02

Skew compensation cables	
Skew cables, (various sizes)	26-524-*xx*

Skew equalizer	
SEQ 100 BNC	60-675-01

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